AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

Claims 1-121 - (Canceled)

Claims 122-177 – (New)

122. (New) A computerized system for exploring a set of decision alternatives $D_1 - D_n$ wherein each of said decision alternatives in said set is evaluated according to at least two criteria C_1 and C_2, said system comprising:

(a)   a first computer program that produces a subset from said set of decision alternatives $D_1 - D_n$ using a filter and values for said at least two criteria C_1 and C_2 wherein said filter produces said subset by:

(i)   comparing decision alternatives in said set of decision alternatives $D_1 - D_n$ according to said values for said at least two criteria C_1 and C_2;

(ii)   removing from said set of decision alternatives $D_1 - D_n$ decisions alternatives that are Pareto dominated according to said values for said at least two criteria C_1 and C_2; and

(iii)   retaining in said set of decision alternatives $D_1 - D_n$ only decisions alternatives that are Pareto optimal according to said values for said at least two criteria C_1 and C_2; and

(b)   a second computer program, in communication with said first computer

program, that presents in a scatterplot said subset of said set of decision

alternatives $D_1 - D_n$ produced by said filter, wherein each axis of said

scatterplot represents a criterion of said at least two criteria C_1 and C_2

used in filtering said decision alternatives $D_1 - D_n$.

123. (New) The computerized system of claim 122 further comprising a third

computer program for obtaining said set of decision alternatives from a

database.

124. (New) The computerized system of claim 122 further comprising a third

computer program for producing said set of decision alternatives using a

functional and compositional modeling language to produce simulations of

behaviors of said decision alternatives.

125. (New) The computerized system of claim 124 wherein said simulations of

behaviors are based on interactions among entity components wherein said

interactions are described using arithmetic, algebraic, differential, or logical

formalisms.

126. (New) The computerized system of claim 122 wherein said filter of said first

computer program is selected from the group consisting of classical filters,

toleranced filters, strict filters, superstrict filters, selective superstrict filters,

discernable difference toleranced filters, two pass toleranced filters, and

onionskin filters.

127. (New) The computerized system of claim 122 wherein said second computer

program is adapted to link scatterplots such that decision alternatives selected

within a first scatterplot are distinguished from other decision alternatives in at least one other scatterplot.

128. (New) The computerized system of claim 122 wherein said second computer program presents said subset of said set of decision alternatives produced by said filter in a multi-attribute display comprising a one-dimensional scatterplot for each of said plurality of criteria C_1 and C_2.

129. (New) The computerized system of claim 122 wherein said second computer program is adapted to narrow to a selected subset decision alternatives displayed in said at least one scatterplot according to secondary criteria selected by a user.

130. (New) The computerized system of claim 122 wherein decision alternatives selected within said scatterplot are retained in an examination set

131. (New) The computerized system of claim 130 wherein said second computer program is adapted to create unions, intersections, and subsets of examination sets in said scatterplot.

132. (New) A computerized method for exploring a set of evaluated decision alternatives $D_1 - D_n$ wherein each of said decision alternatives in said set is evaluated according to at least two criteria C_1 and C_2, said method comprising:

    (a)   producing a subset from said set of decision alternatives $D_1 - D_n$ by applying a multi-criterial filter to values for said at least two criteria C_1 and C_2 wherein said multi-criterial filter produces said subset by:

        (i)   comparing said values for said at least two criteria C_1 and C_2 for

two decision alternatives D_a and D_b;

(ii)   removing D_b from said set of decision alternatives $D_1 - D_n$ if

$C_1(D_a)$ is superior or equal to $C_1(D_b)$ and $C_2(D_a)$ is superior or

equal to $C_2(D_b)$, and either $C_1(D_a)$ is superior to $C_1(D_b)$, or $C_2(D_a)$

is superior $C_2(D_b)$, wherein superiority for each criterion is

determined according to whether larger values for C or smaller

values for C are preferred; and

(iii)   repeating steps (i) and (ii) for said set of decision alternatives $D_1 -$

D_n until no additional decision alternatives are removed by

application of steps (i) and (ii); and

(b)   displaying graphical representations and enabling examination of

decision alternatives in said subset of decision alternatives according to

said at least two criteria C_1 and C_2 by:

(i)   generating a scatterplot wherein each axis is chosen from said set

of at said least two criteria C_1 and C_2;

(ii)   wherein each point on each of said scatterplots represents a

decision alternative that survived said multi-criterial filter for

producing said subset of decision alternatives.

133.   (New) The computerized method of claim 132 wherein said set of evaluated

decision alternatives comprises evaluated decision alternatives retrieved from a

database.

134.   (New) The computerized method of claim 132 wherein said set of evaluated

decision alternatives comprises generated decision alternatives.

135.   (New) The computerized method of claim 134 wherein said step of generating said plurality of decision alternatives comprises using a functional and compositional modeling language to produce simulations of behaviors to evaluate said decision alternatives according to at least two criteria C_1 and C_2.

136.   (New) The computerized method of claim 135 wherein said simulations of behaviors are based on interactions among entity components wherein said interactions are described using arithmetic, algebraic, differential, or logical formalisms.

137.   (New) The computerized method of claim 132 wherein applying a multi-criterial filter comprises applying a multi-criterial filter algorithm selected from the group consisting of classical filter algorithms, toleranced filter algorithms, strict filter algorithms, superstrict filter algorithms, selective superstrict filter algorithms, discernable difference toleranced filter algorithms, two pass toleranced filter algorithms, and onionskin filter algorithms.

138.   (New) The computerized method of claim 132 wherein the step of creating a scatterplot for each of said at least two criteria C_1 and C_2 comprises creating a two-dimensional scatterplot wherein each axis of said scatterplot represents a criterion of said decision alternatives.

139.   (New) The computerized method of claim 132 wherein the step of creating a scatterplot for each of said at least two criteria C_1 and C_2 comprises creating a one-dimensional scatterplot with an axis that represents a criterion of said

evaluated decision alternatives.

140. (New) The computerized method of claim 132 wherein said displaying graphical representations and enabling examination of decision alternatives in said subset of decision alternatives according to said at least two criteria C_1 and C_2 comprises presenting decision alternatives in a multi-attribute display comprising one-dimensional scatterplots wherein each scatterplot comprises an axis that represents a criterion of said decision alternatives.

141. (New) The computerized method of claim 140 further comprising linking said scatterplots such that decision alternatives selected within a first scatterplot are distinguished from other decision alternatives in at least one other scatterplot.

142. (New) The computerized method of claim 132 further comprising a method for discarding from said scatterplots selected decision alternatives.

143. (New) A computerized system for exploring decision alternatives, comprising:

    (a)   a first computer program for producing a set of evaluated decision alternatives $D_1 - D_n$ by:

        (i)   acquiring a plurality of decision alternatives; and

        (ii)   evaluating each of said plurality of decision alternatives according to a plurality of criteria $C_1 - C_n$ to produce said set of evaluated decision alternatives $D_1 - D_n$; and

    (b)   a second computer program, in communication with said first computer program, for displaying graphical representations and enabling examination of evaluated decision alternatives $D_1 - D_n$ by creating one

dimensional scatterplots:

(i)   wherein each scatterplot corresponds to a criterion C of said evaluated decision alternatives D_1 - D_n;

(ii)   wherein each point on said scatterplot represents an evaluated decision alternative D; and

(ii)   wherein said scatterplots are linked so that evaluated decision alternatives selected within a first scatterplot are highlighted within at least one other scatterplot.

144.   (New) The computerized system of claim 143 wherein said first computer program acquires a plurality of decision alternatives by retrieving said plurality of decision alternatives from a database.

145.   (New) The computerized system of claim 143 wherein said first computer program acquires a plurality of decision alternatives by generating said plurality of decision alternatives.

146.   (New) The computerized system of claim 145 wherein said first computer program generates said plurality of decision alternatives using a functional and compositional modeling language to produce simulations of behaviors.

147.   (New) The computerized system of claim 146 wherein said simulations of behaviors are based on interactions among entity components wherein said interactions are described using arithmetic, algebraic, differential, or logical formalisms.

148.   (New) The computerized system of claim 143 wherein said second computer

program applies secondary criteria selected by a user to further narrow said evaluated decision alternatives.

149. (New) The computerized method of claim 143 wherein said second computer program supports discarding from said scatterplots selected evaluated decision alternatives.

150. (New) A computerized method for exploring decision alternatives, comprising:

(a) producing a set of evaluated decision alternatives $D_1 - D_n$ by:

(i) acquiring a plurality of decision alternatives; and

(ii) evaluating each of said plurality of decision alternatives according to a plurality of criteria $C_1 - C_n$ to produce said set of evaluated decision alternatives $D_1 - D_n$; and;

(b) displaying graphical representations and enabling examination of said evaluated decision alternatives $D_1 - D_n$ by creating one dimensional scatterplots:

(i) wherein each scatterplot corresponds to one of said evaluation criteria C of said decision alternatives;

(ii) wherein each point on said scatterplot represents an evaluated decision alternative D; and

(ii) wherein said scatterplots are linked so that evaluated decision alternatives selected within a first scatterplot are distinguished from evaluated decision alternatives in at least one other scatterplot.

151. (New) The computerized method of claim 150 wherein the step of acquiring a plurality of decision alternatives comprises retrieving said plurality of decision alternatives from a database.

152. (New) The computerized method of claim 150 wherein the step of acquiring a plurality of decision alternatives comprises generating said plurality of decision alternatives.

153. (New) The computerized method of claim 152 wherein the step of generating said plurality of decision alternatives comprises using a functional and compositional modeling language to produce simulations of behaviors for said decision alternatives.

154. (New) The computerized method of claim 153 wherein said simulations of behaviors are based on interactions among entity components wherein said interactions are described using arithmetic, algebraic, differential, or logical formalisms.

155. (New) The computerized method of claim 150 further comprising discarding from said scatterplots selected decision alternatives.

156. (New) A computerized system for exploring decision alternatives according to multiple attributes comprising:

    (a)   a seeker software process for producing a set of evaluated decision alternatives D_1 - D_n by:

        (i)   acquiring a plurality of decision alternatives; and

        (ii)   evaluating each of said plurality of decision alternatives according

to a plurality of criteria C_1 - C_n to produce said evaluated decision

alternatives D_1 - D_n;

(b)   a filter software process to produce a subset from said set of decision

alternatives D_1 – D_n by applying a multi-criterial filter to values for at least

two criteria C_1 and C_2 wherein said multi-criterial filter produces said

subset by:

(i)   comparing said values for said at least two criteria C_1 and C_2 for

two evaluated decision alternatives D_a and D_b;

(ii)   removing D_b from said set of evaluated decision alternatives D_1 –

D_n if $C_1(D_a)$ is superior or equal to $C_1(D_b)$ and $C_2(D_a)$ is superior or

equal to $C_2(D_b)$, and either $C_1(D_a)$ is superior to $C_1(D_b)$, or $C_2(D_a)$

is superior $C_2(D_b)$, wherein superiority for each criterion is

determined according to whether larger values for C or smaller

values for C are preferred; and

(iii)   repeating steps (i) and (ii) for said set of evaluated decision

alternatives D_1 – D_n until no additional evaluated decision

alternatives are removed by application of steps (i) and (ii) and

remaining evaluated decision alternatives are trade-offs with

respect to each other; and

(c)   a viewer software process for displaying graphical representations and

enabling examination of evaluated decision alternatives in said subset

according to said at least two criteria C_1 and C_2 by:

(i) creating at least one scatterplot wherein each point on said scatterplot represents an evaluated decision alternative D that survived said multi-criterial filter for producing said subset of evaluated decision alternatives; and

(ii) wherein each evaluated decision alternative in said scatterplot is from said subset of evaluated decision alternatives containing only evaluated decision alternatives that are trade-offs with respect to each other.

157. (New) The computerized system of claim 156 wherein said seeker software process acquires a plurality of decision alternatives by retrieving said plurality of decision alternatives from a database.

158. (New) The computerized system of claim 156 wherein said seeker software process acquires a plurality of decision alternatives by generating said plurality of decision alternatives.

159. (New) The computerized system of claim 158 wherein said seeker software process generates said plurality of decision alternatives using a functional and compositional modeling language to produce simulations of behaviors.

160. (New) The computerized system of claim 159 wherein said simulations of behaviors are based on interactions among entity components wherein said interactions are described using arithmetic, algebraic, differential, or logical formalisms.

161. (New) The computerized system of claim 156 wherein said filter software

process applies a multi-criterial filter selected from the group consisting of classical filter algorithms, toleranced filter algorithms, strict filter algorithms, superstrict filter algorithms, selective superstrict filter algorithms, discernable difference toleranced filter algorithms, two pass toleranced filter algorithms, and onionskin filter algorithms.

162. (New) The computerized system of claim 156 wherein said viewer software process creates said at least one scatterplot by creating a two-dimensional scatterplot wherein each axis of said scatterplot represents a criterion C of said decision alternatives.

163. (New) The computerized system of claim 156 wherein said viewer software process creates said at least one scatterplot by creating a one-dimensional scatterplot with an axis that represents a criterion C of said decision alternatives.

164. (New) The computerized system of claim 156 wherein said viewer software process displays graphical representations and enables examination of decision alternatives in said subset of decision alternatives according to said at least two criteria C_1 and C_2 by presenting decision alternatives in a multi-attribute display comprising one-dimensional scatterplots wherein each scatterplot comprises an axis that represents a criterion C of said decision alternatives.

165. (New) The computerized system of claim 164 wherein said viewer software process links said scatterplots such that decision alternatives selected within a

first scatterplot are distinguished from decision alternatives in at least one other scatterplot.

166. (New) The computerized method of claim 156 said viewer software process supports discarding from said scatterplots selected decision alternatives.

167. (New) A computerized method for exploring decision alternatives according to multiple attributes comprising:

   (a)   producing a set of evaluated decision alternatives D_1 - D_n by:

      (i)   acquiring a plurality of decision alternatives; and

      (ii)   evaluating each of said plurality of decision alternatives according to a plurality of criteria C_1 - C_n to produce said evaluated decision alternatives D_1 - D_n; and

   (b)   a filter software process to produce a subset from said set of decision alternatives D_1 – D_n by applying a multi-criterial filter to values for at least two criteria C_1 and C_2 wherein said multi-criterial filter produces said subset by:

      (i)   comparing said values for said at least two criteria C_1 and C_2 for two evaluated decision alternatives D_a and D_b;

      (ii)   removing D_b from said set of evaluated decision alternatives D_1 – D_n if $C_1(D_a)$ is superior or equal to $C_1(D_b)$ and $C_2(D_a)$ is superior or equal to $C_2(D_b)$, and either $C_1(D_a)$ is superior to $C_1(D_b)$, or $C_2(D_a)$ is superior $C_2(D_b)$, wherein superiority for each criterion is determined according to whether larger values for C or smaller

values for C are preferred; and

(iii) repeating steps (i) and (ii) for said set of evaluated decision alternatives $D_1 - D_n$ until no additional evaluated decision alternatives are removed by application of steps (i) and (ii) and remaining evaluated decision alternatives are trade-offs with respect to each other; and

(c) displaying graphical representations and enabling examination of decision alternatives in said subset of decision alternatives according to said at least two criteria by:

(i) creating at least one scatterplot wherein each point on said scatterplot represents an evaluated decision alternative D that survived said multi-criterial filter algorithm for producing said subset of decision alternatives; and

(ii) wherein each evaluated decision alternative in said scatterplot is from said subset of evaluated decision alternatives containing only evaluated decision alternatives that are trade-offs with respect to each other.

168. (New) The computerized method of claim 167 wherein said step of acquiring a plurality of decision alternatives comprises retrieving said plurality of decision alternatives from a database.

169. (New) The computerized method of claim 167 wherein said step of acquiring a plurality of decision alternatives comprises generating said plurality of decision

alternatives.

170. (New) The computerized method of claim 169 wherein said step of generating said plurality of decision alternatives comprises using a functional and compositional modeling language to produce simulations of behaviors for said decision alternatives.

171. (New) The computerized method of claim 170 wherein said simulations of behaviors are based on interactions among entity components wherein said interactions are described using arithmetic, algebraic, differential, or logical formalisms.

172. (New) The computerized method of claim 167 wherein the step of applying a multi-criterial filter comprises applying a multi-criterial filter algorithm selected from the group consisting of classical filter algorithms, toleranced filter algorithms, strict filter algorithms, superstrict filter algorithms, selective superstrict filter algorithms, discernable difference toleranced filter algorithms, two pass toleranced filter algorithms, and onionskin filter algorithms.

173. (New) The computerized method of claim 167 wherein the step of creating said at least one scatterplot comprises creating a two-dimensional scatterplot wherein each axis of said scatterplot represents a criterion of said evaluated decision alternatives.

174. (New) The computerized method of claim 167 wherein the step of creating said at least one scatterplot comprises creating a one-dimensional scatterplot with an axis that represents a criterion C of said evaluated decision alternatives.

175. (New) The computerized method of claim 167 wherein said displaying graphical representations and enabling examination of decision alternatives in said subset of decision alternatives according to said at least two criteria comprises presenting decision alternatives in a multi-attribute display comprising one-dimensional scatterplots wherein each scatterplot comprises an axis that represents a criterion of said evaluated decision alternatives.

176. (New) The computerized method of claim 175 further comprising linking said scatterplots such that decision alternatives selected within a first scatterplot are distinguished from decision alternatives in at least one other scatterplot.

177. (New) The computerized method of claim 167 further comprising discarding from said scatterplots selected decision alternatives.